One- and Two-Family Basement Finish Projects

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City Planning and Development Department-Development Services (CPD-DS)
City of Kansas City, Missouri www.kcmo.gov/planning

Many CPD-DS customers wish to finish basement spaces within both new and existing one- and two-family dwellings. Although CPD-DS neither requires nor reviews plans for such work, permits are required unless specifically exempted by Article I of the Kansas City Building and Rehabilitation Code. Since these projects may have complications related to code conformance, as an added service to our customers, CPD-DS hereby offers the following list of code requirements for consideration. This list is intended to help our customers avoid common deficiencies, but it should not be considered to be a complete list of code requirements for such work.

Ceiling Height. 2012 International Residential Code Section R305.1 states that habitable rooms, hallways, corridors, bathrooms, toilet rooms, laundry rooms and basements shall have a ceiling height of not less than 7 feet . Not more than 50 percent of the required area may have a sloped ceiling less than 7 feet in height with no portion of the required areas less than 5 feet in height. Portions of a room with a sloping ceiling measuring less than 5 feet or a furred ceiling measuring less than 7 feet from the finished floor to the finished ceiling shall not be considered as contributing to the minimum required habitable area for that room.

Bathrooms shall have a minimum ceiling height of 6 feet 8 inches over the fixture and at the front clearance area for fixtures as shown in Figure R307.1. A shower or tub equipped with a showerhead shall have a minimum ceiling height of 6 feet 8 inches above a minimum area of 30 inches by 30 inches at the showerhead.

Ceilings in basements without habitable spaces may project to within 6 feet, 8 inches of the finished floor; and beams, girders, ducts or other obstructions may project to within 6 feet 4 inches of the finished floor.

Stair Headroom and Geometry. 2012 International Residential Code Sections R311.7,5.1 and R311.7,5.2 state that stairways accessing basements shall have riser heights of not more than 7 3/4 inches and a run length of not less than 10 inches. IRC Section R311.7.2 states that stairs shall have a headroom clearance of not less than 6 feet 8 inches, measured from the nosing of the treads.

Where the nosings of treads at the side of a flight extend under the edge of a floor opening through which the stair passes, the floor opening shall be allowed to project horizontally in to the required headroom a maximum of 4 ¾ inches.

Under Stair Protection. 2012 International Residential Code Section R-302.7 states that enclosed accessible space under stairs shall have walls and soffits protected on the enclosed side with ½ inch gypsum board.

Handrails. 2012 International Residential Code Sections R311.7.8 states that handrails having minimum and maximum heights of 34 inches and 38 inches, respectively, measured vertically from the nosing of the treads, shall be provided on at least one side of stairways of four or more risers. The handgrip portion of the handrails shall not be more than 2 inches nor less than 1 ¼ inches in cross-sectional dimension, or the shape shall provide an equivalent gripping surface. Handrails projecting from a wall shall have a space of not less than 1 ½ inches between the wall and the handrail.

Guards. 2012 International Residential Code Section R312.1 states that porches, balconies, or raised floor surfaces located more than 30 inches above the floor or grade below at any point within 36 inches horizontally to the open side shall have guards not less than 36 inches in height. Open sides of stairs with a total rise of more than 30 inches above the floor or grade below shall have guards not less than 34 inches in height measured vertically from the nosing of the treads. Required guards on open sides of stairways, raised floor areas, balconies and porches shall have intermediate rails or ornamental closures which will not allow passage of a sphere 4 inches or more in diameter.

Exceptions:

1. The triangular openings formed by the riser, tread and bottom rail of a guard at the open side of a stairway may be of such a size that a sphere 6 inches indiameter cannot pass through.

2. Openings for required guards on the sides of stair treads shall not allow a sphere 4 3/8 inches to pass through.

Sleeping Room Egress. 2012 International Residential Code Section R310.1 (as modified by the KCMO Code of Ordinances, Section 18-57 R310.1) states that every sleeping room shall have at least one operable window or exterior door approved for emergency egress or rescue. The units must be operable from the inside to a full clear opening without the use of separate tools. Where windows are provided as a means of egress or rescue they shall have a sill height of not more than 44 inches above the floor. All egress or rescue windows from sleeping rooms must have a minimum net clear opening of 5.7 square feet. The minimum net clear opening height dimension shall be 24 inches. The minimum net clear opening width dimension shall be 20 inches.

Exception: Grade floor window may have a minimum net clear opening of 5 square feet.

Section R310.2 states that window wells required for emergency escape or rescue shall have horizontal dimensions that allow the door or window of the emergency escape and rescue opening to be fully opened and shall provide a minimum net clear area of 9 square feet, with a minimum horizontal projection and width of 36 inches.

Exception: The ladder and steps required by Section R310.2.1 shall be permitted to encroach a maximum of 6 inches into the required dimensions of the window well.

Section R310.2.1 states that window wells with a vertical depth greater that 44 inches below the adjacent ground level shall be equipped with a permanently affixed ladder or steps usable with the window in the fully opened position. Ladders or steps required by this section shall not be required to comply with Sections R311.7 and R311.8. Ladders or rungs shall have an inside width of at least 12 inches, be spaced at least 3 inches from the wall and shall be spaced not more than 18 inches on center vertically for the full height of the window well.

Smoke Alarms. 2012 International Residential Code Section R314 states that smoke alarms shall be installed in each sleeping room, outside of each separate sleeping area in the immediate vicinity of the bedrooms and on each additional story of the dwelling, including basements and cellars, but not including crawl spaces and uninhabitable attics. All smoke alarms shall be interconnected such that the actuation of one alarm will actuate all the alarms in the individual unit and shall provide an alarm which will be audible in all sleeping areas. All smoke alarms shall be approved and listed and shall be installed in accordance with the manufacturer's instructions. IRC Section R314.3.1 states that when alterations, repairs or additions requiring a permit occur (permits for exterior work only, or for plumbing or mechanical work, are excluded), or when one or more sleeping rooms are added or created in existing dwellings, the entire dwelling unit shall be provided with smoke alarms located as required for new dwellings; the smoke alarms are not required to be interconnected unless other remodeling considerations require removal of the appropriate wall an ceiling coverings to facilitate concealed interconnected wiring.

Carbon Monoxide Alarms. 2012 International Residential Code Section 315.1 states that an approved carbon monoxide alarm shall be installed outside of each separate sleeping area in the immediate vicinity of the bedrooms in dwelling units within which fuel-fired appliances are installed and in dwelling units that have attached garages. IRC Section R315.3 states that when alterations, repairs or additions requiring a permit occur in existing dwellings (permits for exterior work only, or for plumbing or mechanical work, are excluded), including the creation of a sleeping room, the entire dwelling unit shall be provided with carbon monoxide alarms located as required for new dwellings.

Attached Garages. 2012 International Residential Code Section R302.5 states that openings from a private garage into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with either solid wood doors not less than 1 3/8 inch in thickness or 20-minute fire rated doors, or equivalent. Section R302.6 and Table R302.6 state that the garage shall be completely separated from the residence and its attic area by means of ½-inch gypsum board or equivalent applied to the garage side and that garages beneath habitable rooms shall be separated from all habitable rooms above by not less than 5/8 inch Type X gypsum board or equivalent. Where this separation is a floor/ceiling assembly, the structure supporting the separation shall also be protected by not less than ½ inch gypsum board or equivalent.

Protection Against Decay. 2012 International Residential Code Section R317.1 states that all sills and sleepers which rest on a concrete or masonry slab which is in direct contact with the ground, wood joists within 18 inches of the ground, wood girders within 12 inches of the ground, ends of wood girders entering exterior masonry or concrete walls having clearances of less than .5 inch on tops, sides and ends, wood siding, sheathing and framing on the exterior of a building having a clearance of less than 6 inches from the ground, wood structural members supporting moisture permeable floors or roofs that are exposed to the weather and wood furring strips or other wood framing members attached directly to the interior of exterior masonry or concrete walls below grade shall be of an approved species and grade of lumber, pressure preservatively treated in accordance with AWPA U1, or naturally durable wood as defined in IRC Chapter 2.

Fireblocking. 2012 International Residential Code Section R-302.11 states that fireblocking shall be provided to cut off all concealed draft openings (both vertical and horizontal) and to form an effective fire barrier between stories, and between a top story and the roof space. Fireblocking shall be provided in wood-frame construction in the following locations:

1. In concealed spaces of stud walls and partitions, including furred spaces, at the ceiling and floor level;

2. At all interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings, cove ceilings, etc.;

3. In concealed spaces between stair stringers at the top and bottom of the run;

4. At openings around vents, pipes, ducts, chimneys and fireplaces at the ceiling and floor level, with approved materials to resist the passage of flame and products of combustion.

5. Fireblocking of cornices of a two-family dwelling is required at the line of dwelling unit separation.

Except as provided in Item 4 above, fireblocking shall consist of 2-inch nominal lumber, or two thicknesses of 1-inch nominal lumber with broken lap joints, or one thickness of 23/32-inch plywood with joints backed by 23/32-inch plywood, or one thickness of 3/4-inch Type 2-M particleboard with joints backed by 3/4-inch Type 2-M particleboard, or other approved materials. Batts or blankets of mineral or glass fiber or other approved non-rigid materials shall be permitted for compliance with the 10 foot horizontal fireblocking in walls constructed using parallel rows of studs or staggered studs. The integrity of all fireblocks shall be maintained.

Light, Ventilation and Heating. 2012 International Residential Code Section R303.1 states that all habitable rooms shall be provided with aggregate glazing area of not less than 8 percent of the floor area of such rooms. The minimum openable area to the outdoors shall be 4 percent of the floor area being ventilated..

Exceptions:

1. The glazed areas need not be openable where the opening is not required for emergency escape and rescue and a whole-house mechanical ventilation system is installed in accordance with IRC Section M1507.

2. The glazed areas may be omitted in rooms where the above exception is satisfied and artificial light is provided capable of producing an average illumination of 6 footcandles over the area of the room at a height of 30 inches above the floor level.

3. Use of sunroom and patio covers, as defined in IRC Section R202, shall be permitted for natural ventilation if in excess of 40 percent of the exterior sunroom walls are open, or are enclosed only by insect screening.

Section R303.3 requires that bathrooms, water closet compartments and other similar rooms shall be provided with aggregate glazing area in windows of not less than 3 square feet, one-half of which must be openable.

Exception: The glazed areas shall not be required where artificial light and a local exhaust system with a ventilation rate of 50 cfm intermittent or 20 cfm continuous is provided. The exhaust shall be vented directly to the outdoors.

Combustion Air. 2012 International Residential Code Section G2407.1 states that fuel –burning equipment shall have provision for a sufficient supply of air for fuel combustion, draft hood dilution and ventilation of the space in which the equipment is installed. The methods of providing such combustion air shall be in accordance with 2012 IRC Sections G2407.5 through G2407.9.

Customers who wish to propose alternate construction methods regarding the above mentioned items or for any other code requirements, should refer to CPD-DS Information Bulletin Number 101 regarding the Code Modification Request process. For any questions on these provisions or any others relating to one- and two-family dwelling construction, please call (816) 513-1511 where helpful CPD-DS associates stand ready to assist.